F-18 fluorodeoxyglucose positron emission tomography/computed tomography scan imaging in sarcoidosis involving multiple lymph nodes, lung parenchyma, liver and skeleton

Sir,

Sarcoidosis is a granulomatous disease of unknown etiology usually involving mediastinum. Extrathoracic involvement can be seen in one or more organs. Disseminated systemic involvement is rare. We report a patient with systemic sarcoidosis involving many intrathoracic and extrathoracic organs including multiple lymph nodes, lung parenchyma, liver and skeleton detected by F-18 fluorodeoxyglucose (FDG) positron emission tomography (PET)/computed tomography (CT) imaging. F-18 FDG PET/CT was useful in this patient demonstrating the systemic involvement including liver and skeleton.

A 63 year-old woman who developed dsypnea 2 weeks ago was referred to Nuclear Medicine Department for PET/CT imaging due to a mass lesion in the middle lobe of the right lung and infiltration in the lower lobe of the left lung detected on CT scan [Figure 1].

A PET scan with non-diagnostic CT studywas performed. The blood glucose level was 98 mg/dL before injection of 333 MBq of F-18 FDG. The images were obtained using Siemens Biograph Duo PET/CT after a 60 min uptake period. Three minutes per bed position was used for data acquisition. F-18 FDG PET scans demonstrating multiple foci of increased uptake throughout the body. PET/CT images revealed foci of increased F-18 FDG accumulation in the right cervical, supraclavicular and upper paratracheal, bilateral hilar, subcarinal and broncho-pulmonary, and bilateral inguinal lymph nodes. Pathological F-18 FDG uptake was observed in the middle lobe of right lung and infiltration in the lower lobe of left lung. PET/CT images demonstrating focally increased F-18 FDG uptake in right lateral process of T6 vertebrae, inferior portion of the left scapula, spinous process of T11 vertebrae, left lamina of L3 vertebrae, main body of the right pubic bone and multiple irregular lesions in the liver [Figure 2].

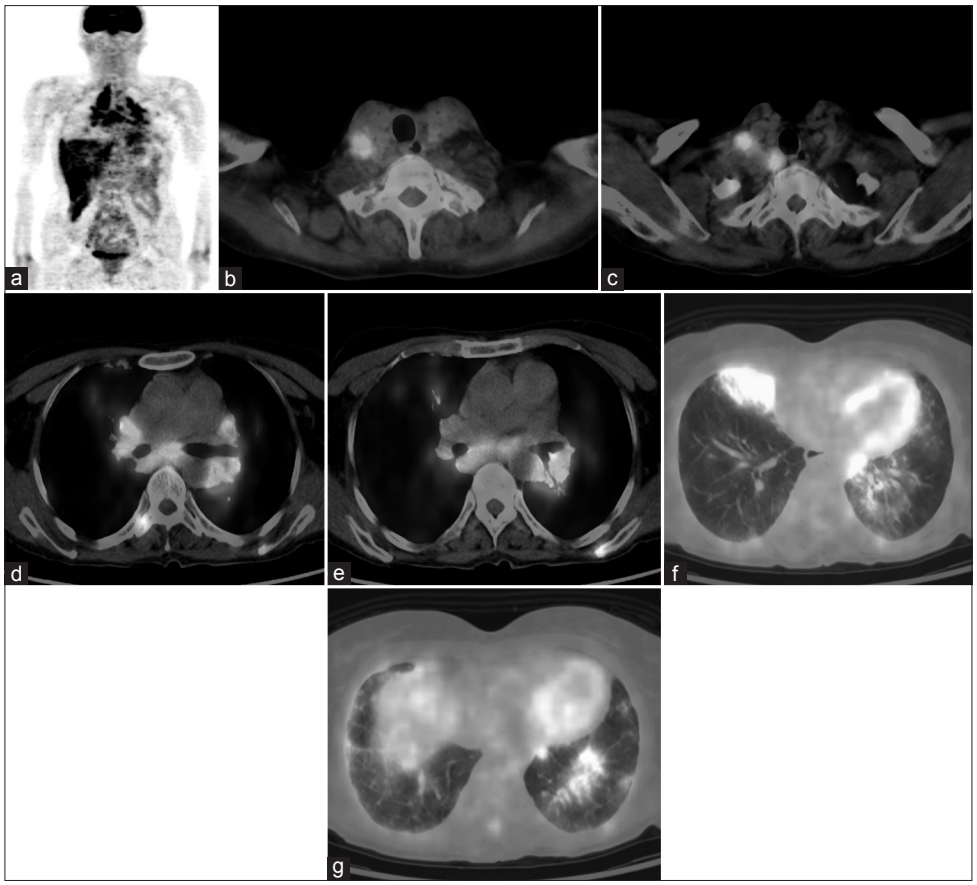

Figure 1: Coronal section of F-18 fluorodeoxyglucose positron emission tomography (FDG PET) scan demonstrating multiple foci of increased uptake throughout the body (a) PET/computed tomography (CT) fusion images showing foci of increased F-18 FDG accumulation in the right cervical (b) supraclavicular and upper paratracheal (c) lymph nodes (SUV_{max}) 4.8, 5.1, 4.1 respectively), bilateral hilar and subcarinal lymph nodes and right lateral process of T6 vertabrae (d) (SUV_{max} in right hilar lymph nodes 9.0, left hilar lymph nodes 10.5, subcarinal lymph nodes 7.5, right lateral process of T6 vertabrae 5.5, respectively), inferior portion of the left scapula and bilateral hilar and subcarinal lymph nodes (e) (SUV_{max} in left scapula 6.2 and left hilar lymph nodes 9.0, right hilar 10.5, subcarinal 6.1), the middle lobe of the right lung (f) (SUV_{max} 13.7), infiltration in the lower lobe of left lung and a broncho-pulmonary lymph node (g) (SUV_{max} 7.3 and 6.9, respectively)

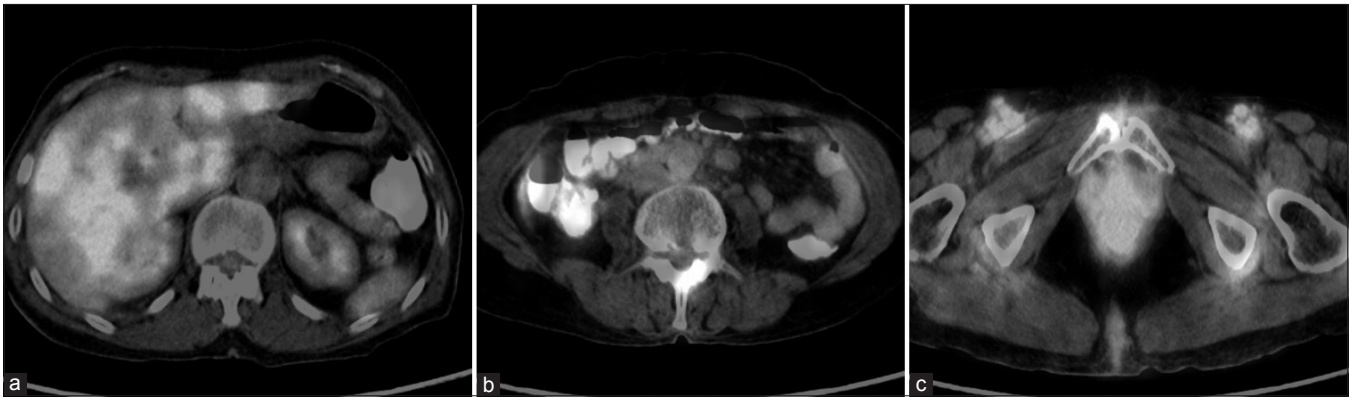

Figure 2: Positron emission tomography/computed tomography PET/CT fusion images demonstrating focally increased fluorodeoxyglucose (FDG) uptake in the spinous process of T11 vertebrae and multiple irregular regions in the liver (a) (SUV_{max} 7.2 and 7.9, respectively), left lamina of L3 vertebra (b) (SUV_{max} 6.6), bilateral inguinal lymph nodes and main body of the right pubic bone (c) (SUV_{max} in the right inguinal lymph nodes 5.2, left inguinal lymph nodes 5.2, right pubic bone 5.1)

Clinical use of FDG PET/CT was previously reported in assessing patients with cardiac, bone and neurosarcoidosis.[1-3] Studies showed that the probability of detecting extrapulmonary involvement is higher when FDG PET/CT is used making this technique a valuable tool fort he diagnostic work-up and activity assessment of sarcoidosis. Systemic involvement is uncommon and widely accepted to be an indicator of poor prognosis. Multiple organ involvement including the skeleton and liver in the same patient as reported in our case is extremely rare. To the best of authors' knowledge, F-18 FDG uptake in liver involvement of systemic sarcoidosis was not previously reported in the literature. Our case is

thus unique in this respect. Extrrapulmonary involvement including liver, skeleton, and inguinal lymph nodes could hardly be demonstrated in our patient without F-18 FDG PET/CT, which also contributed to beter demonstration of intrathoracic disease.

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